15.4 MOBILE DATABASES

With the advancement of communication technology, only physical media is not sufficient. One of the developments in communication technology is wireless communication. Through wireless network, communication between far of users without a physical medium is possible. Recent advances in this wireless communication and portable devices has led to a new dimension of communication and processing called mobile computing which is increasingly becoming popular as people need information even on the move in this rapid changing information word. A mobile database is either a stationary database that can be connected to by a mobile computing device such as a smart phone over a mobile network, or a database which is actually carried by the mobile device. A mobile database provides fully connected information space which can be created by wireless or wired systems (PCs, cellular system, GSM). WAP (Wireless Application Protocol) allows mobile users to access internet from their mobile phones.

Some of the commercially available mobile databases are Oracle Lite, DB2 Everywhere, SQL Server Compact, Sybase SQL Anywhere etc.

Architecture of Mobile Database

Mobile database architecture is a distributed architecture where several computers are interconnected through high speed network. Mobile database architecture consists of following components:

- **Mobile (remote) Database:** It stores mobile data and provides various mobile applications.
- **Mobile Database Platform:** Consists of laptop, PDA etc that manages and store client data and provide client applications.
- **Corporate Database Server:** They store corporate data and provide various corporate applications.
- **Corporate DBMS:** They manage corporate data and provide corporate applications.
- **Two Way Communication Link:** Data transfer takes place between corporate and mobile database servers.

- **Mobile DBMS**: These DBMS manage mobile data and communicate with relational DBMS and provide computing resources to match mobile devices.

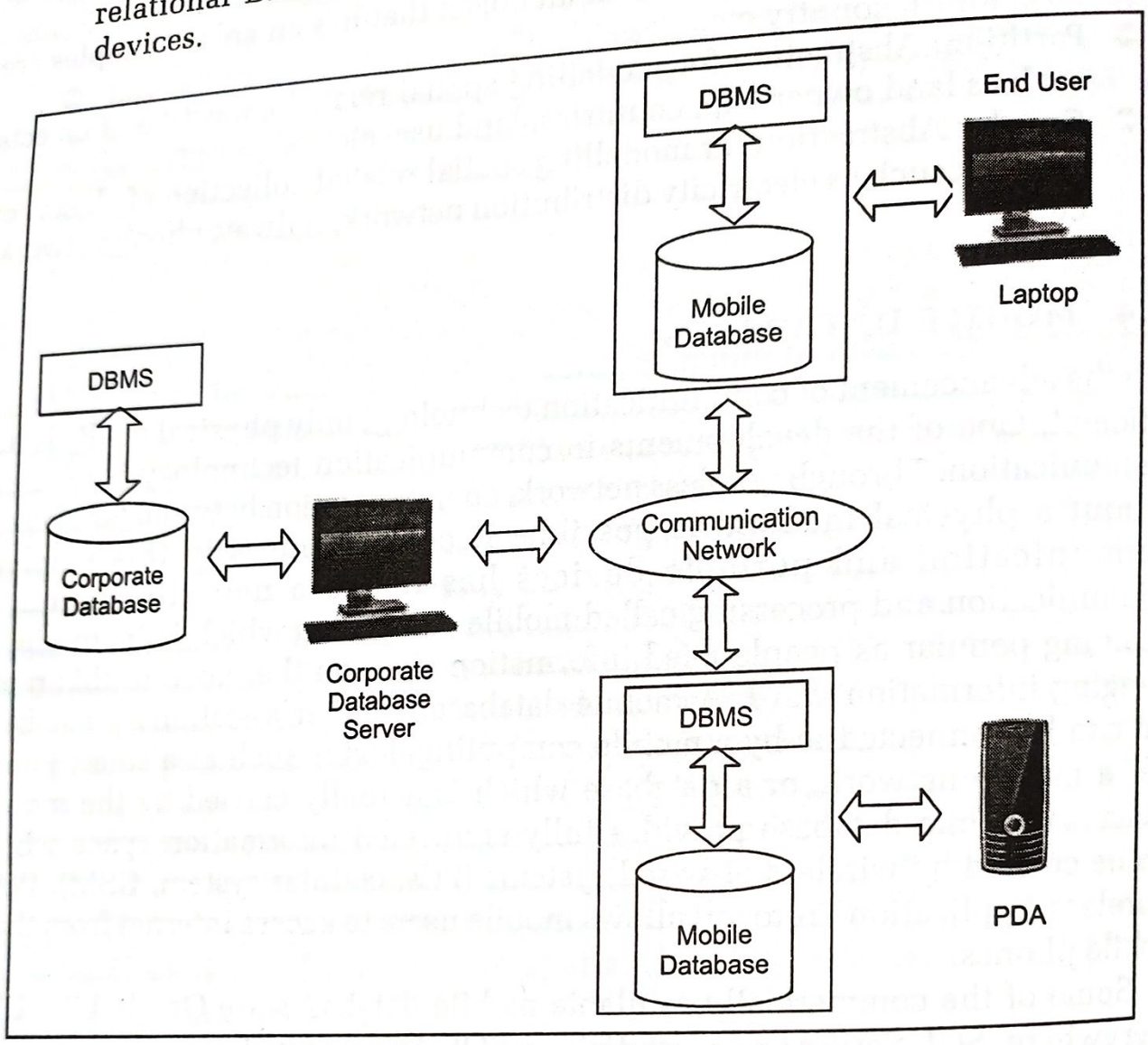

Fig. 15.1: Architecture of Mobile database

Considerations while Designing a Mobile Database

- Bandwidth must be conserved.
- Mobile devices have slower CPUs.
- Mobile devices have limited memory.
- Mobile devices have limited battery life.
- Mobile device have limited screen size for output.
- Mobile device have limited query capability for input.
- Mobile users must be able to work without a network connection. Cache can be used to store recently accessed data and transaction. Only recently modified data, uploading might be deferred until reconnected.
- Synchronization of multiple devices used by a user to centralized database.
- Maintaining wireless connection when geographic region is changed.

Applications

Some of the applications of Mobile Databases are given below:

- Emergency Services
- Anywhere, Anytime Service
- E-Commerce
- Search Services (Google SMS, Google Maps, Yahoo Go, MSN, AOL etc.)

Limitations

(a) Limited wireless bandwidth
(b) Less secured
(c) Limited energy source
(d) Vulnerable to physical activities